

NOVEMBER 29.

Dr. R. S. KENDERDINE in the chair.

Thirty-one persons present.

The special business of the meeting being the nomination of officers, councillors and members of the Finance Committee, a letter from Dr. W. S. W. Ruschenberger was read, declining to be a candidate for re-election to the office of President, whereupon a committee, consisting of Messrs. Isaac C. Martindale, S. R. Roberts and J. H. Redfield, was appointed to prepare a suitable expression of the Academy's appreciation of Dr. Ruschenberger's services to the society.

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DECEMBER 6.

Mr. THOS. MEEHAN, Vice-President, in the chair.

Thirty-six persons present.

*The genus Carterella vs. Spongiophaga Pottsi.*—Mr. EDWARD POTTS referred to a paper (On *Spongiophaga Pottsi* n. sp., Ann. and Mag. of Nat. Hist., Nov., 1881) by H. J. Carter, F. R. S., etc., in which that eminent scientist gives an interpretation, differing from his own, of the statosphere tendrils which form the characteristic feature of the new genus of fresh-water sponges to which Mr. Carter's name had been attached in recognition of his very distinguished services. He wished to consider the subject entirely apart from its personal relation to themselves; and only as it concerned the stability of a genus, in which, as he claimed, for the first time in the history of fresh-water sponges, these tendrils had been noticed as distinctive features.

He then, at some length, gave his reasons why we should not accept Mr. Carter's theory of the parasitic nature of these tendrils or filaments; saying, that of the two points in the paper most likely to impress a student who had not seen specimens of the genus referred to, or one unfamiliar with the general subject, the *first* was founded upon certain appearances represented in figure 2 of Mr. Carter's plate. This figure shows an "axial canal" through the centre of the filament, widening into the "tubular prolongation from the process of the chitinous coat" of the statosphere and representing the supposable digestive tract of the animal parasite.

As after repeated and very careful examination of numerous specimens, both in a fresh condition and after being subjected to

different methods of preparation, he had failed entirely to meet with an instance showing similar appearances, he referred specimens of all three species of the genus to Prof. Jos. Leidy, whose fame as an accurate observer is world-wide; to Mr. Jno. A. Ryder, and to Prof. Kellicott and Mr. Henry Mills of Buffalo, the discoverers of one of the above species. The efforts of these gentlemen were equally unsuccessful, their opinion being well expressed in Prof. Leidy's words, "In my mind there can be no question as to the tendrils being part of the structure of the statoblast, and their parasitic nature would never have occurred to me." "The tendrils are homogeneous extensions of the inner capsule of the statoblast and I see no trace of the appearance to which you refer in Carter's figure 2." A paragraph from the letter of Prof. Kellicott makes a further point. These processes "are not found on the statoblasts of any other species in the Niagara River; I have examined hundreds of the statoblasts of *Carterella tubisperma*, and have not found one without said tube. I brought some of these, having wintered in the river, to my room last May; after a few days, there was sponge growth; so this form if a parasite did not destroy the life, etc."

The second point made by Mr. Carter was that the species marked *C. tubisperma* from Buffalo, was identical, as shown by its spiculation, with one marked *Heteromeyenia repens* from Lehigh Gap, Pa. That one of these identical species should exhibit the tubular prolongation and accompanying tendrils, while the other did not, was considered presumptive evidence that the former was affected in some abnormal way. To this Mr. Potts answered, that while there was unquestionably much similarity in shape of the birotulate spicules of the two sponges, covering the "seed bodies" in the ordinary fashion as a second or outer coat, the Lehigh Gap species alone exhibited the second class of long birotulates, interspersed with the others, which had induced him to place it in the genus *Heteromeyenia*. For this reason he believed the species were not identical, and this argument fails.

In continuation he reasoned that it should not be considered a matter of surprise that the statospheres of some genera pertaining to the family of fresh-water sponges, should present tentative features of this character. In a paper published so long ago as 1859, Mr. Carter called attention to the resemblance in appearance and function between the statoblasts of the Polyzoa and the so-called "seed bodies" of *Spongilla*. The parallelism is rendered more complete when we observe that in those forms of Polyzoa possessing a comparatively rigid octocyst, the statoblasts are circular or lenticular with smooth margins. Some of these are no doubt washed out from the tubular body from time to time during the winter, to extend the species to other places; while enough are retained by it to renew the growth in the original locality. On the other hand, where the body mass is simply gelatinous, as in *Pectinatella*, *Cristatella*, etc., decaying away and

releasing the statoblasts on the first approach of winter, these are provided with either a single row or a more complicated series of marginal tentacular hooks, by which they become matted together, entangled with roots, stems, etc., or held to rough places on planks or stones.

The same relation to the permanency of their skeleton structure we find existing amongst these genera and species of fresh-water sponges. The statospheres of nearly all species are provided with some arrangement for protection and retention. These vary greatly in kind and degree, inversely according to the protection afforded them by the surrounding skeleton. Perhaps the lowest in the series in this regard is *Meyenia Leidyi*. This is a thin encrusting sponge; the skeleton spiculæ stout and firmly matted together; maintaining the position and form of the mass throughout the year. The statospheres are formed in the autumn in the lowest parts of the sponge, within special capsules formed by interlacing spiculæ. It is hardly possible these should wash away, and accordingly we find no means provided peculiar to themselves for detaching them. Their armor consists of a closely laid series of birotulate spiculæ with entire margins, excellent as a shield but hopelessly useless as a means of retention. On the other hand no apparent means of diffusion are provided, and as a consequence the species seems to be extremely local; none having been noticed except in the stream where the first specimen was gathered, and within a few yards of the probable spot.

*Spongilla fragilis* of Leidy, when seen during the summer-time, nearly resembles in form the above-mentioned species; its skeleton structure, however, is much more fragile and is frequently detached and washed away, leaving a uniform series of statoblasts standing side by side, with no special coating of spicules for each, as in most other species, but grouped and held together by a common coating of cellular or granular matter, covered by and imbedding a great number of cylindrical spined spicules. A variety of this is often observed (whether it differs specifically in other respects he could not be certain) in which the statospheres are segregated into groups of four or more, spherically enclosed in a similar coating, thus appearing like one large seed. While the statoblasts of the former arrangement retain their positions during the winter and germinate there in the spring, it may be that *this* is a character assumed for diffusive propagation.

In *Spongilla lacustris* and similar branching sponges, the apparently conflicting ends of retention and diffusion are attained in a different way. The "seed" are formed in the interstices of both the sessile and the branching portions. In the former they are retained during the winter, partially by the agency of recurved spines upon the acerates projecting from the seed coat; while the fragile branches soon break off and float their contained statospheres to distant parts.

The massive sessile character of many sponges, repeated through

various forms of *Spongilla* and *Meyenia*, partially protects their statospheres from the accidents of the winter season, and when that protection fails them, the rays of the birotulate spicules of the latter and the curved acerates of the former, come in play to retain a sufficient number until the time of germination in the spring.

Three species of American sponges have been grouped under the generic name *Heteromeyenia*, characterized by the presence of a *second* form of birotulate spicules interspersed amongst the more familiar series. These are about double the length of the former and are terminated by long recurved hooks. The framework of two of these species is altogether filmy and fugitive; the statospheres are not held within the interspaces of the skeleton or retained in any other way, and are therefore dependent upon the above hooks for their attachment to proper bases for future growth.

Completing the series of retentive agencies we find the statospheres of the three species of the disputed genus *Carterella* provided, in addition to their birotulate spicules, with long curling or twisting tendrils, extensions, as we have heard, of the tough chitinous coat. These are required to meet the emergency occasioned by the looseness of their skeleton texture, from which the sarcode flesh dying early washes away, most of the spicules soon following in the winter floods. The eggs are thus left to the protection of the above tendrils which lap them together, bind them to the remaining spicules or the roots of water weeds or shore plants; or, assuming the role of the hair the plasterer uses, bind the deposited silt about them and both to the stones, where they await the appointed time for a new growth. This function is very clearly shown in the collection in Mr. Potts' possession, and the resemblance in material structure of these tendrils to that of the specialized hooks of the forms of Polyzoa referred to, is very striking. He hopes therefore, that as both analogy and observed facts seem to indicate the correctness of his position, Mr. Carter will be willing to accept the compliment intended and which is so well deserved.

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DECEMBER 13.

The President, Dr. RUSCHENBERGER, in the chair.

Twenty-three persons present.

The death of Ami Boué, a correspondent, was announced.

*Pilobolus crystallinus*.—Mr. THOMAS MEEHAN remarked that this small fungus had proved this season to be an expensive annoyance to florists engaged in winter forcing flowers. Rose-